

### Characteristics

- Hollow Shaft Encoder: Ø 50 mm
- Through Hollow Shaft: Ø 10 - 14mm
- Up to 9.000 ppr
- IP65



### Electrical data

Output	Incremental	
Resolution (pulses per revolution) operating temperature: -20°C to 50°C	min. 1, 2, 5, 6, 8, 10, 15, 16, 20, 25, 30, 32, 36, 40, 47, 50, 60, 64, 75, 80, 90, 100, 125, 150, 180, 200, 250, 300, 360, 400, 455, 500, 512, 600, 635, 720, 800, 1.000, 1.024, 1.131, 1.250, 1.500, 2.000, 2.048, 2.400, 2.500, 3.000, 3.600, 4000, 4.096, 5.000, 8.192, 9.000*(other options on request)	
Supply Voltage	4,5 VDC to 30 VDC (45mA max. - no load)	
Outputs Voltage	High	$V_{in} - 0,6$ at - 10 mA
	Low	$V_{in} - 1,3$ at - 25 mA 500 mV max. at 10 mA
Output current	30 mA max. load per output channel	
Frequency Response	300 kHz max.	
Output Format	Two channel (A, B) quadrature with Index (Z) and optional complementary ( $\bar{A}$ , $\bar{B}$ , $\bar{Z}$ ) outputs	
Phase Sense	A leads B clockwise from the mounting end of the encoder	
Index	Gated with Channels A and B high	
Accuracy	$\pm 0,26$ arc-min.	
Outputs	ASIC Push pull und differential OL7272 Push-pull und differential Line Driver 26C31 Differential Line Driver 5V Output (5 V Input)	
Electrical Protection	Reverse polarity and output short circuit protected	
Noise Immunity	EN 61000-6-2 (2005) EN 61000-6-3 (2007)	

### Mechanical data

Material: Housing Hollow Shaft Cap	Aluminum Brass Aluminum
Weight: Encoder Cable	~150 gr 60 gr / Meter
Bearing Life	$>1,9 \times 10^{10}$ revolutions at rated load
Shaft Loads: axial radial	max. 50 N max. 50 N
max. Shaft Speed	4.500 rpm
Starting Torque	$< 0,02$ Nm at 25°C
Mass Moment of Inertia	6,0 gcm <sup>2</sup>
Operating Temp.	-40°C to +85°C
Storage Temp.	-40°C to +85°C
Shock	100 G / 11 ms
Vibration	10- 2.000 Hz / 10 G
Bump	10 G / 16 ms (1.000 x 3 Axis)
Humidity	98% RH without condensation
IP Rating	IP65

# Datasheet

## Connection Option

Cable	8 leads(0,14 mm <sup>2</sup> , 26 AWG); Differential, twisted pairs, shielded
Connection	5-pin M12 8-pin M12 9-pin M23 12-pin M23

## Output Terminations

Channel	Standard Cable	
	Standard Output	Differential Output
	Wire color	
A	pink	pink
$\bar{A}$	gray*	gray
B	green	green
$\bar{B}$	yellow*	yellow
Z	white	white
$\bar{Z}$	brown*	brown
V <sub>SUP</sub>	red	red
GND	blue	blue

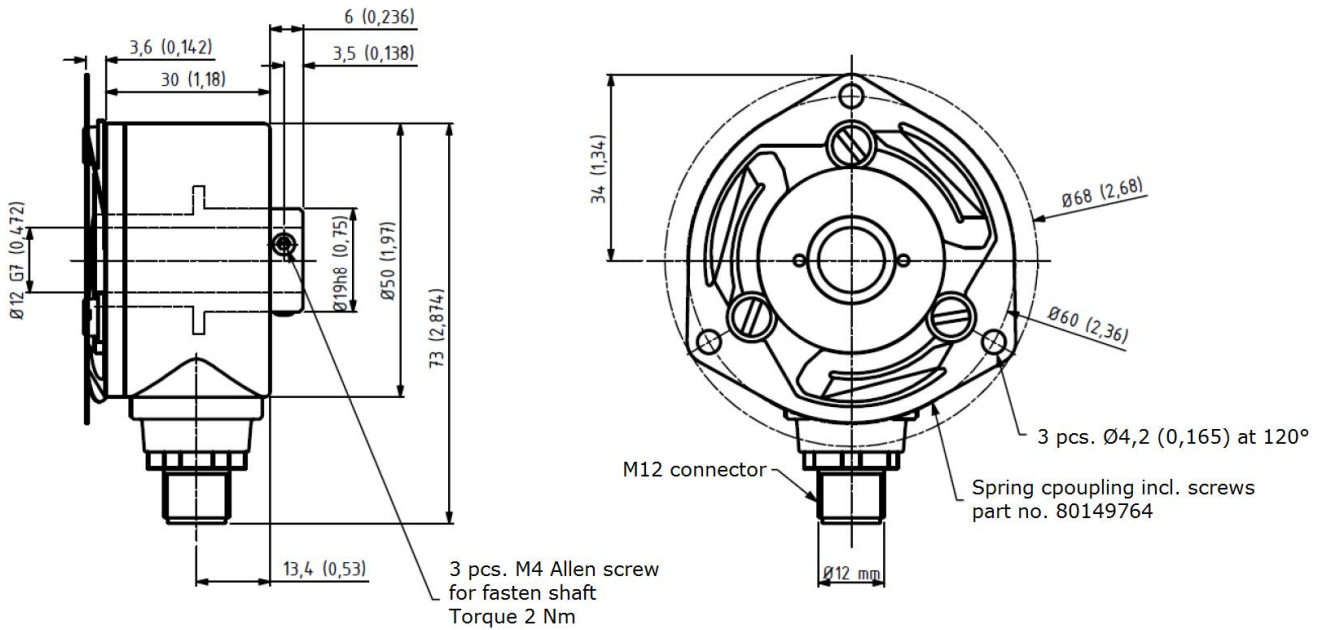
	Standard Cable							
	M12 5-pin		M12 8-pin		M23 9-pin		M23 12-pin	
	Standard Output		Differential Output		Standard Output		Differential Output	
Pin	Channel							
1	V <sub>SUP</sub>	A	A	A	A	GND	$\bar{B}$	
2	B	V <sub>SUP</sub>	B	B	B	NC	NC	
3	GND	$\bar{A}$	Z	Z	Z	Z	Z	
4	A	B	GND	$\bar{A}$	$\bar{A}$	GND	$\bar{Z}$	
5	Z	$\bar{B}$	GND	$\bar{B}$	$\bar{B}$	A	A	
6		Z	GND	$\bar{Z}$	$\bar{Z}$	GND	$\bar{A}$	
7		GND	V <sub>SUP</sub>	V <sub>SUP</sub>	V <sub>SUP</sub>	NC	NC	
8		$\bar{Z}$	GND	GND	GND	B	B	
9			Shield	Shield	Shield	Shield	Shield	
10						GND	GND	
11						NC	NC	
12						V <sub>SUP</sub>	V <sub>SUP</sub>	

GND = Circuit Ground

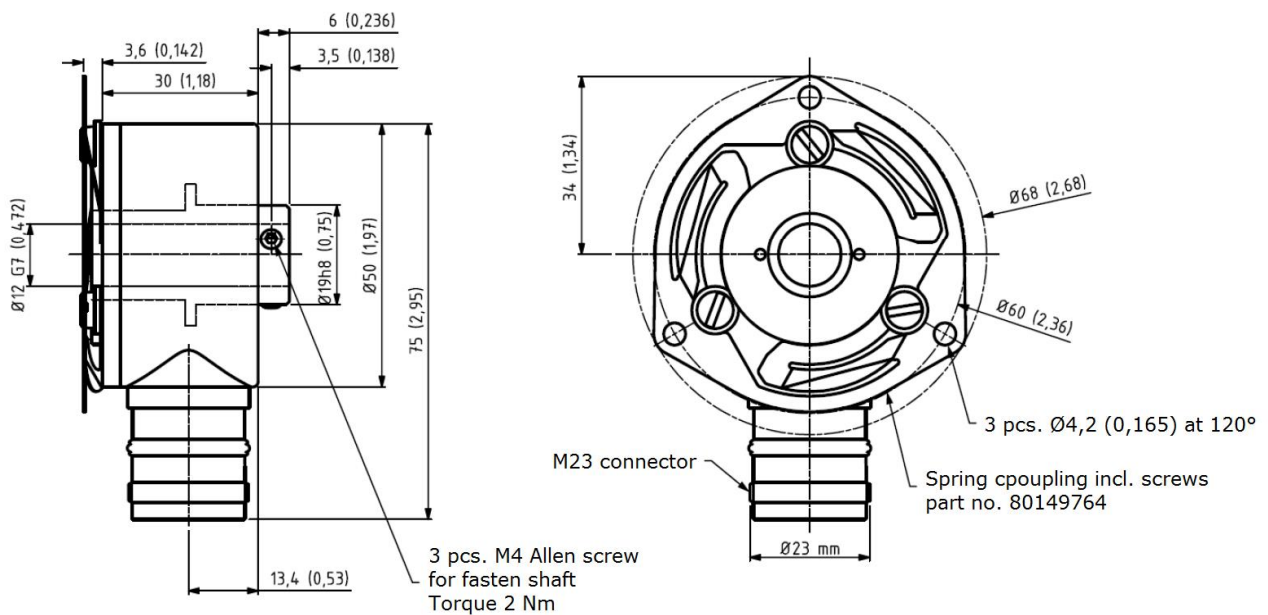
\*internally connected as GND

**Dimension**

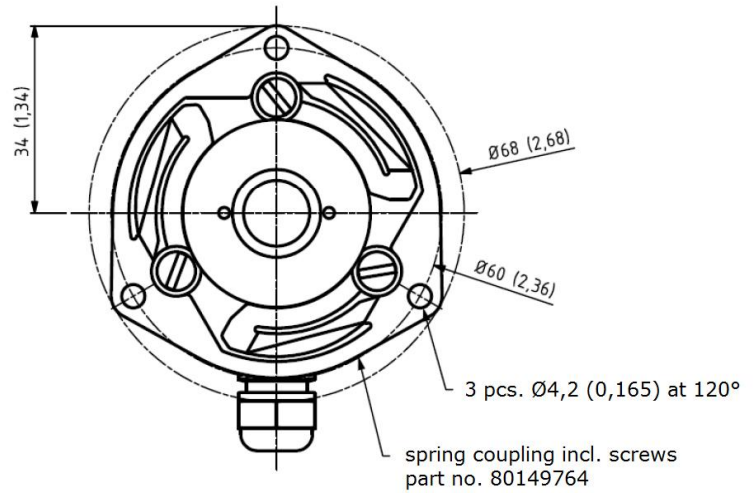
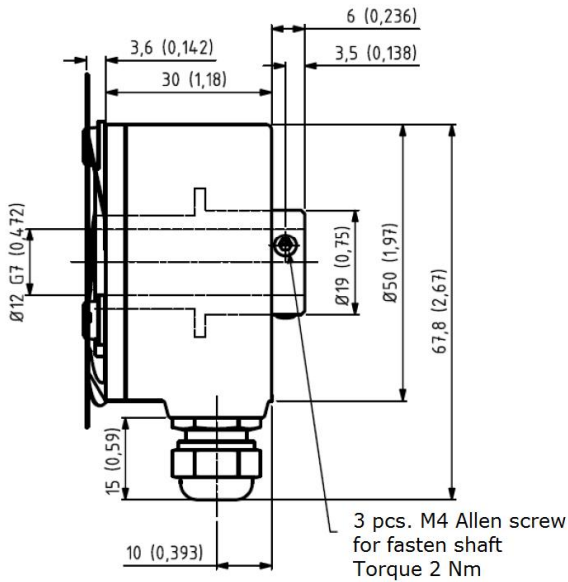
**M12 Connector** mm (inches)








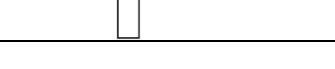
**M23 Connector** mm (inches)



## Standard Cable Gland mm (inches)



### Output waveform

<p>A</p>  <p><math>\bar{A}</math></p>  <p>B</p>  <p><math>\bar{B}</math></p>  <p>Z</p>  <p><math>\bar{Z}</math></p> 	<p>Channel Tolerance Phase difference Tolerance Z Channel Tolerance</p>	<p>180°e ± 36°e 90°e ± 18°e 90°e ± 18°e</p>
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# Datasheet

## Ordering example

**Type** SCH50I - 100 - D - 10-40 - 65 - 01 - S - C9 - S1

**Pulse per Revolution**  
see table

### Output

**D** = Differential  
**N** = Standard  
**L** = 26C31 Line Driver 5V/5V only  
**M** = OL2727 Line Driver  
**NON** = open collector NPN  
**NOP** = open collector PNP

### Shaft Dia. - Shaft Length

**10-40** = 10 x 40mm  
**12-40** = 12 x 40mm  
**14-40** = 14 x 40mm  
**3/8-40** = 3/8inch x 40mm\*  
**1/2-40** = 1/2inch x 40mm

**IP**  
**65** = IP65

### Cable Length

**01** = 1 m  
**XX** = specify length  
**00** = no cable

### Takeout

Cable  
**S** = radial  
Connector  
**S** = radial

### Connector

**C9** = M23/ 9-pin  
**C12** = M23/ 12-pin  
**00** = no Connector  
**P5** = M12/ 5-pin  
**P8** = M12/ 8-pin

### Spring Coupling

**S1** = 1 hole p/n 80147042  
**S2** = 1 hole p/n 80131035  
**S3** = 1 hole p/n 80130621  
**S4** = 2 holes p/n 80149823  
**S5** = 3 holes p/n 80149764  
**S6** = 4 holes p/n 80131333  
**S7** = 2 holes p/n 80149662

\*May incur longer delivery time